

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 June 2005 (09.06.2005)

PCT

(10) International Publication Number
WO 2005/051529 A3

(51) International Patent Classification?: F23C 5/00,
F23M 3/00

(21) International Application Number:
PCI/US2004/039044

(22) International Filing Date:
19 November 2004 (19 11 2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/718,351 21 November 2003 (21 11 2003) US

(71) Applicant (for all designated States except US): ASSOCI-
ATED PHYSICS OF AMERICA, LLC. [US/US], Route
5, Box 718, Greenwood, MS 38930 (US)

(72) Inventors: POTGIETER, Deon, John, 803 Regency
Street, Monroe, LA 71201 (US) HOPPER, Bully, Free-
man, Route 2, Box 126F, Carrollton, MS 38917 (US)

(74) Agent: MOFFATT, Michael, J., Fulwider Patton Lee &
Utecht, LLP, 200 Oceangate, Suite 1550, Long Beach, CA
90802 (US)

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RQ, RU, SC, SD, SE, SQ, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
QM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG)

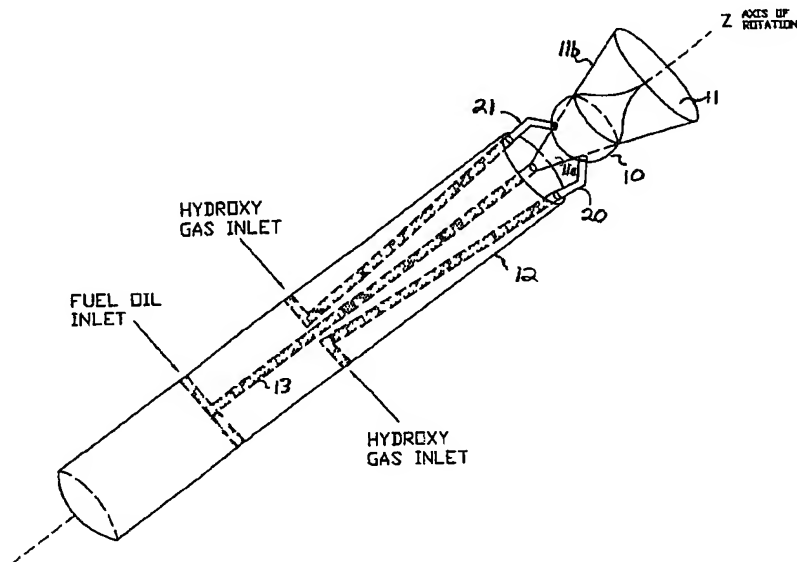
Published:

— *with* international search report
— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments*

(88) Date of publication of the international search report:
16 March 2006

For two letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette

(54) Title: A METHOD AND DEVICE FOR COMBUSTING LIQUID FUELS USING HYDROGEN



(57) Abstract: A method and device for combustion of liquid fuels is presented which uses a plurality of rotating hydrogen flames to blast atomize and ignite a mechanically dispersed stream of the liquid fuel. This combustion method and device are particularly suited for heavy oil fuels, such as vegetable oils, which are not well burned using conventional burner technologies. This combustion method involves establishing a zone of combusting hydrogen and projecting a mechanically atomized dispersion of the liquid fuel into and through this zone of combusting hydrogen.